WHAT IS CLAIMED IS:

1. An RF (Radio Frequency) power amplifier comprising:

a first bias controller for detecting an amplitude of an input RF signal and outputting a DC (Direct Current) signal varying with the detected amplitude based on a non-linearity of a rectification transistor;

a second bias controller for generating a bias voltage that optimizes amplification efficiency by adjusting the voltage of the DC signal received from the first bias controller through a source follower transistor; and

an amplifier transistor activated by a driving voltage, for amplifying the input signal according to the bias voltage received from the second bias controller and outputting the amplified signal.

2. The RF power amplifier of claim 1, wherein the first bias controller comprises:

the rectification transistor having a gate for receiving the input signal, a drain connected to the gate, and a grounded source;

a first bias resistor having an end connected to the driving voltage of the amplifier transistor and an other end connected to the gate of the rectification transistor;

a second bias resistor having an end connected to the gate of the rectification transistor and an other end connected to ground; and

a first low-pass filter connected to the drain of the rectification transistor, for reducing an RF component from the DC signal and providing the RF component-reduced DC signal to the second bias controller.

3. The RF power amplifier of claim 2, wherein the first low-pass filter comprises a resistor having a first end connected to the drain of the rectification transistor and a second end connected to a first end of a capacitor and the capacitor having a second end connected to ground, the second end of the resistor being an output end of the first bias controller.

4. The RF power amplifier of claim 2, wherein the second bias controller comprises:

a third bias resistor having an end connected to the driving voltage;

the source follower transistor having a gate connected to an output end of the first bias controller, a grounded drain, and a source connected to an other end of the third bias resistor;

a divider having a first division resistor having a first end connected to the source of the source follower transistor and a second division resistor having a first end connected to a second end of the first division resistor and having a second end connected to ground, for adjusting the voltage level of the DC signal received from the first bias controller; and

a second low-pass filter for removing an RF component from a signal received from the divider and providing the RF component-free signal as the bias voltage to the amplifier transistor.

5. The RF power amplifier of claim 4, wherein the source follower transistor is a complementary device.

6. The RF power amplifier of claim 4, wherein the second low-pass filter comprises a capacitor having a first end connected to the second end of the first division resistor and a second end connected to ground, the first end of the

capacitor being an output end of the second bias controller.

7. The RF power amplifier of claim 2, wherein the second bias controller comprises:

a third bias resistor having an end connected to the driving voltage;

the source follower transistor having a gate connected to an output end of the first bias controller, a grounded drain, and a source connected to an other end of the third bias resistor;

a first divider including a first division resistor having a first end connected to the driving voltage and a second division resistor having a first end connected to a second end of the first division resistor and having a second end connected to ground;

a first resistor having a first end connected to the second end of the first division resistor;

an operational amplifier having a positive input connected to the source of the source follower transistor and a negative input connected to a second end of the first resistor;

a second resistor for feeding back the output of the operation amplifier to the negative input of the operation amplifier; and

a second low-pass filter for removing the RF component from the output of the power operation amplifier and providing the RF component-free signal as the bias voltage to the amplifier transistor.

8. The RF power amplifier of claim 7, wherein the source follower transistor is a complementary device.

9. The RF power amplifier of claim 7, wherein the second low-pass filter comprises a capacitor having a first end connected to the output of the operation amplifier and a second end connected to ground, the first end of the capacitor being an output end of the second bias controller.

10. The RF power amplifier of claim 1, further comprising input and output matching circuits for matching the impedances of the input and output signals to the input and output impedances of the amplifier transistor.

11. An RF (Radio Frequency) power amplifier comprising:

a first bias controller for detecting an amplitude of an input RF signal and outputting a DC (Direct Current) signal varying with the detected amplitude based on a non-linearity of a rectification transistor;

a second bias controller for generating a bias voltage that optimizes amplification efficiency by adjusting the voltage of the DC signal received from the first bias controller through a source follower transistor; and

an amplifier transistor activated by a driving voltage, for amplifying the input signal according to the bias voltage received from the second bias controller and outputting the amplified signal, wherein:

the second bias controller includes:

a first bias resistor having an end connected to the driving voltage;

the source follower transistor having a gate connected to an output end of the first bias controller, a grounded drain, and a source connected to an other end of the first bias resistor;

a divider having a first division resistor having a first end connected to the source of the source follower transistor and a second division resistor having a first end connected to a second end of the first division resistor and having a second end

connected to ground, for adjusting the voltage level of the DC signal received from the first bias controller; and

a first low-pass filter for removing an RF component from a signal received from the divider and providing the RF component-free signal as the bias voltage to the amplifier transistor.

12. The RF power amplifier of claim 11, wherein the first bias controller comprises:

the rectification transistor having a gate for receiving the input signal, a drain connected to the gate, and a grounded source;

a second bias resistor having an end connected to the driving voltage of the amplifier transistor and an other end connected to the gate of the rectification transistor;

a third bias resistor having an end connected to the gate of the rectification transistor and an other end connected to ground; and

a second low-pass filter connected to the drain of the rectification transistor, for reducing an RF component from the DC signal and providing the RF component-reduced DC signal to the second bias controller.

13. The RF power amplifier of claim 12, wherein the second low-pass filter comprises a resistor having a first end connected to the drain of the rectification transistor and a second end connected to a first end of a capacitor and the capacitor having a second end connected to ground, the second end of the resistor being the output end of the first bias controller.

14. The RF power amplifier of claim 11, wherein the source follower transistor is a complementary device.

15. The RF power amplifier of claim 11, wherein the first low-pass filter comprises a capacitor having a first end connected to the second end of the first division resistor and a second end connected to ground, the first end of the capacitor being an output of the second bias controller.

16. An RF (Radio Frequency) power amplifier comprising:

a first bias controller for detecting an amplitude of an input RF signal and outputting a DC (Direct Current) signal varying with the detected amplitude based on a non-linearity of a rectification transistor;

a second bias controller for generating a bias voltage that optimizes amplification efficiency by adjusting the voltage of the DC signal received from the first bias controller through a source follower transistor; and

an amplifier transistor activated by a driving voltage, for amplifying the input signal according to the bias voltage received from the second bias controller and outputting the amplified signal, wherein

the second bias controller includes:

a first bias resistor having an end connected to the driving voltage;

the source follower transistor having a gate connected to an output terminal of the first bias controller, a grounded drain, and a source connected to an other end of the first bias resistor;

a first divider including a first division resistor having a first end connected to the driving voltage and a second division resistor having a first end connected to a second end of the first division resistor and having a second end connected to ground;

a first resistor having a first end connected to the second end of the first division resistor;

an operational amplifier having a positive input connected to the source of the source follower transistor and a negative input connected to a second end of the first resistor;

a second resistor for feeding back the output of the operation amplifier to the negative input of the operation amplifier; and

a first low-pass filter for removing the RF component from the output of the power operational amplifier and providing the RF component-free signal as the bias voltage to the amplifier transistor.

17. The RF power amplifier of claim 16, wherein the first bias controller comprises:

the rectification transistor having a gate for receiving the input signal, a drain connected to the gate, and a grounded source;

a second bias resistor having an end connected to the driving voltage of the amplifier transistor and an other end connected to the gate of the rectification transistor;

a third bias resistor having an end connected to the gate of the rectification transistor and an other end connected to ground; and

a second low-pass filter connected to the drain of the rectification transistor, for reducing an RF component from the DC signal and providing the RF component-reduced DC signal to the second bias controller.

18. The RF power amplifier of claim 17, wherein the second low-pass filter comprises a resistor having a first end connected to the drain of the rectification transistor and a second end connected to a first end of a capacitor and the capacitor having a second end connected to ground, the second end of the resistor being the output end of the first bias controller.

19. The RF power amplifier of claim 16, wherein the source follower transistor is a complementary device.

20. The RF power amplifier of claim 16, wherein the first low-pass filter comprises a capacitor having a first end connected to an output of the operational amplifier and a second end connected to ground, the first end of the capacitor being an output of the second bias controller.